TURNER, JOHN ROSCOE. *The Ricardian Rent Theory.* Pp. xix, 221. Price, $4.00. New York: The New York University Press, 1921.

Students of the past generation have paid scant heed to early American economists. The period before the Civil War, and even the post-war decade with its many monetary and tariff questions, were dominated by the influence of Ricardo and Mill rather than that of American writers. Professor Turner's book, *The Ricardian Rent Theory in Early American Economics*, endeavors to bring together the doctrines of these neglected writers and to show their contributions to early economic science.

This study was begun and completed eight years ago by Professor Turner, then a graduate student. It is presented as originally written, except for the omission in large part of a sixty page critique of the Ricardian rent doctrine, which is summarized in the first chapter of the book. The body of the study, comprising Chapters II to IX, discusses the views concerning rent, population and related subjects of some fifteen American economists of the period 1820–1880. Of those mentioned, Francis Wayland, Henry C. Carey, Francis Bowen and Arthur L. Perry are best known. This detailed study of each of the writers is followed by a résumé of the doctrines advocated by them, regarding wealth, value, capital, population and rent. Professor Fetter's introduction, dealing with the place of these men and their writings in economic literature, and the extensive bibliography at the end of the study, are worthy additions.

The treatment limits itself to a consideration of the rent doctrine of Ricardo with its necessary implications in the theory of population and the law of diminishing returns. Its chief value lies in a comprehensive treatment of the doctrines of these early writers. The author points out: (1) That they deserve a higher place than was accorded them in Professor Dunbar's article in the *North American Review* (1876); and (2) that they showed an independence of judgment, fostered by their new environment. Students of economic theory will welcome this study in a field previously treated only in scattered articles. HARRY T. COLLINGS.

University of Pennsylvania.

BOWLEY, ARTHUR L. *Elements of Statistics* 4th Edition, revised. Pp. xi, 459. Price, 24s. London: P. S. King & Son Ltd., 1921.

The first edition of this text was published in 1901, while mathematical statistical analysis was still relatively in its infancy. Developments of method since that time have been great and applications of the more refined methods of analysis have been still greater. In the field of economics, in particular, the first application of the method of correlation to a time series, so far as I am aware, was published in 1901, viz., Hooker's *Study of the Marriage Rate and Trade.* The present revised edition of Bowley's text reflects these developments. In Part I, for instance, dealing with general elementary methods, the chapter on "Application of Averages to Tabulation" has been replaced by one on "Measurements of Dispersion and Skewness."

The more extended changes and additions, however, have been made in Part II, dealing with the applications of mathematics to statistics. This part has been completely rewritten and the treatment of theory is much more detailed and more extended. The author states that his treatment and his selection of examples have been chosen in particular with reference to problems arising in sociological and economic investigations; whereas, as is well known, modern statistical theory has developed largely in connection with biological investigations.

One significant change is noted in his development of theory. In the 1901 edition an effort was made to obtain the principal derivations, *e.g.* the law of error, by the use of algebra only; in the present edition he very frankly gives up this plan and uses calculus. The field of statistical theory has become so broadened in the last twenty years that a large portion of the literature cannot be read without a knowledge of calculus. Bowley mentions, significantly, in his preface that "no one should attempt to measure correlation till he has studied the theory closely and critically"—a viewpoint with which I am in complete sympathy.

It is a joy to note the expansion in this new edition—its extent and its direction.